



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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EPA Region 5 Records Ctr.



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REPLY TO ATTENTION OF:
5RA-14

Honorable John Glenn
United States Senate
Washington, D.C. 20510

Dear Senator Glenn:

As indicated in our December 18, 1990 letter to you regarding the design investigations proposed for the Industrial Excess Landfill (IEL) Site in Uniontown, Ohio the United States Environmental Protection Agency (U.S. EPA) is committed to properly designing and implementing the IEL remedy. In response to concern raised by the public and members of both your and Senator Metzenbaum's staff, the U.S. EPA has incorporated sampling for radioactive compounds in the remedial design studies being conducted at IEL.

As you are aware, U.S. EPA has proposed to sample groundwater and landfill leachate with comprehensive radionuclide analysis. In addition, U.S. EPA will filter the Methane Venting System (MVS) stack influent and two pilot gas extraction wells in the center-line of the landfill for radiological particulates. This letter and its enclosures convey the results of U.S. EPA's statistical analysis of the probability of detecting radionuclides via ground water monitoring. This statistical analysis and ground water model involved much detail, requiring more time than originally anticipated to complete. These results supplement the information provided in our earlier correspondence, which discussed U.S. EPA's rationale in support of our decision not to characterize the waste material by soil core sampling with analysis for radionuclides. The results of that study revealed the probability of locating a hypothetical radioactive waste source for the first time with 50,000 boreholes to be only 0.22.

In the enclosed ground water modeling report, a three-dimensional, unidirectional analytical transport model, PLUME, was used to estimate the concentration of three potential radioactive sources (cesium-137, tritium, and uranium-234/238) downgradient from the landfill at selected time periods. The input parameters chosen for the model were based on available site data and accepted modeling practices. It should be noted that since no activity data for downgradient radiochemical compounds exist to calibrate the model, certain assumptions were made concerning the source

location. Where applicable, conservative assumptions were made and incorporated into the model.

The probabilities of detection via either monitoring wells or boreholes were determined by randomly locating the hypothetical radiochemical source along the western or southern landfill boundary and determining whether a monitoring well or borehole is within the boundaries of detectable plume activities modeled from that source. Based upon the assumption that a minimum of four boreholes will be converted to monitoring wells, it was concluded that the probability of detection by the future monitoring well network ranges from 0.105 to 0.349 for uranium-234/238 and tritium. Cesium-137 is not present above detection limits at any of the monitoring points. Due to this result, the hypothetical source strength for Cesium-137 was then arbitrarily increased by a factor of ten, resulting in a 0.191 probability of detection.

A significant conclusion of the modeling results indicate that the radioactive compound activities downgradient from the selected hypothetical sources are just above the analytical detection limit near the landfill and are not detectable beyond the monitoring well network. Cesium-137 is not detectable beyond 50 meters west or south of the landfill. Even after arbitrarily increasing the hypothetical source strength by a factor of ten, the cesium-137 activities are still nondetectable beyond 100 meters west or 60 meters south. Tritium activities are below detection limits before the mean travel distance of the plume reaches 200 meters. Uranium-234/238 activities are also nondetectable before the mean travel distance of the plume reaches 200 meters. Since the analytical detection limits are significantly below the activities at which these compounds might pose a health risk, activities that are below analytical detection limits are not of concern. These low activities also explain the fairly low probabilities of detection by the monitoring well network.

Also enclosed are the results of the expanded calculations using U.S. EPA's National Air and Radiation Environmental Laboratory's PRESTO waste burial computer model. PRESTO is used to model long term impact associated with low level radioactive waste sites. The calculations, based on hypothetical radionuclide inventory data, were made for a 1000 year period following closure of the landfill. Four sets of calculations were made assuming a receptor well point at variable distances (100m, 200m, 300m, and 800m) from a hypothetical waste trench. As with the ground water model, a number of very conservative assumptions were made.

It was concluded that the maximum exposed individual would not receive more than 10 microrem per year. This exposure is considered equivalent to the amount of radiation an individual would receive in approximately one hour from natural background, which is also below the lifetime risk range of 1×10^{-7} .

U.S. EPA is confident that the extensive groundwater and soil gas testing that is planned at IEL will identify any contamination that may exist at levels of concern. As U.S. EPA has previously indicated, the design investigation proposed has been structured as a phased approach to the remediation of IEL. If these initial rounds of sampling indicate elevated levels of either radiological materials or toxic contaminants in any environmental pathway at IEL, U.S. EPA will re-evaluate the need for more extensive rounds of testing.

U.S. EPA extends its appreciation to you and your staff for its involvement in the IEL Technical Information Committee (TIC) process. The Agency is looking forward to participating in a teleconference call to discuss any questions or concerns that may arise as a result of reviewing the enclosed materials, or any aspect of the remediation at IEL. Please feel free to contact me if you have any questions.

Sincerely yours,

/s/ Original signed by
VALDAS V. ADAMKUS

Valdas V. Adamkus
Regional Administrator

Enclosures